RF Exposure exemption

KDB447498, D04V01

1.   2.1, Declaration of RF exposure compliance for exemption from routine evaluation limits

FCC ID	2A5WLTSB65
Company Name	Suzhou Unison Auto Electronic Co., Ltd.
Model Number	TSB65
Manufacturer	Suzhou Unison Auto Electronic Co., Ltd.
☐ 2.1.2 1-mW Test Exemption	Per § 1.1307(b)(3)(i)(A), a single RF source is exempt RF device if the available maximum time-averaged power is no more than 1 mW, regardless of separation distance.
☑ 2.1.3 SAR-Based Exemption	Per § 1.1307(b)(3)(i)(B), a single RF source is considered an RF exempt device if its available maximum time-averaged (matched conducted) power or its effective radiated power (ERP), whichever is greater, are less than or the threshold P_{th} (mW) described in the following formula. $$P_{th} \text{ (mW)} = \begin{cases} ERP_{20\,cm}(d/20\text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20\,cm} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$ Where $$x = -\log_{10}\left(\frac{60}{ERP_{20\,cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$ and $$ERP_{20\,cm} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$ d = the separation distance (cm);
☐ 2.1.4 MPE-Based Exemption	Per § 1.1307(b)(3)(i)(C), a single RF source is an RF exempt device if its ERP (watts) is no more than a frequency-dependent value, as described below: (see table below)

RF Source Frequency		Minimum Distance		Threshold ERP
f_L MHz	f_H MHz	$\lambda_L / 2\pi$	$\lambda_H / 2\pi$	W
0.3 – 1.34		159 m – 35.6 m		1,920 R²
1.34 – 30		35.6 m – 1.6 m		3,450 R²/f²
30 – 300		1.6 m – 159 mm		3.83 R²
300 – 1,500		159 mm – 31.8 mm		0.0128 R²f
1,500 – 100,000		31.8 mm – 0.5 mm		19.2R²

Subscripts L and H are low and high; λ is wavelength.
From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns.

Result	For 315MHz: Max. EIRP (dBm) = E (dBµV/m) -95.2 = -17.474 dBm Max. ERP (dBm) = Max. EIRP (dBm) - 2.15dB = -19.624 dBm Max. Power (mW) = 10^(Max. ERP (dBm))/10 = 0.011 mW Pth (mW) = 36.31 mW Max. Power (mW) < Pth (mW) For 433.92MHz: Max. EIRP (dBm) = E (dBµV/m) -95.2 = -23.699 dBm Max. ERP (dBm) = Max. EIRP (dBm) - 2.15dB = -25.849 dBm Max. Power (mW) = 10^(Max. ERP (dBm))/10 = 0.003 mW Pth (mW) = 23.17 mW Max. Power (mW) < Pth (mW) Conclusion: Pass.